ADB

ERD WORKING PAPER SERIES NO. 30
ECONOMICS AND RESEARCH DEPARTMENT

Asian Regionalism and Its Effects on Trade in the 1980s and 1990s

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Asian Development Bank

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Asian Development Bank
P.O. Box 789
0980 Manila
Philippines

November 2002
ISSN 1655-5252

Foreword

The ERD Working Paper Series is a forum for ongoing and recently completed research and policy studies undertaken in the Asian Development Bank or on its behalf. The Series is a quick-disseminating, informal publication meant to stimulate discussion and elicit feedback. Papers published under this Series could subsequently be revised for publication as articles in professional journals or chapters in books.

Contents

Acronyms

ADB	Asian Development Bank
ADO	Asian Development Outlook
AFTA	ASEAN Free Trade Area
APEC	Asia-Pacific Economic Cooperation forum
ASEAN	Association of Southeast Asian Nations
CER	Australia-New Zealand Closer Economic Relations Trade Agreement
CIS	Commonwealth of Independent States
CU	Customs union
DMC	Developing Member Country
DOTS	Direction of Trade Statistics
ECO	Economic Cooperation Organization
EEC	European Economic Community
EFTA	European Free Trade Association
EU	European Union
FTA	Free-trade agreement
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IMF	International Monetary Fund
Mercosur	Southern Common Market
MSG	Malenesian Spearhead Group
NAFTA	North American Free Trade Agreement
OLS	Ordinary Least Squares
PRC	People's Republic of China
PTA	Preferential trading arrangement
SAPTA	South Asian Preferential Trade Arrangement
SPARTECA	South Pacific Regional Trade and Economic Cooperation Agreement
SREZ	Subregional Economic Zone
WTO	World Trade Organization

Abstract

This paper begins by outlining the major preferential trade agreements (PTAs) in Asia and other regions and reviewing trends in trade flows. The paper uses a gravity model augmented with several sets of dummy variables to estimate the effect of various PTAs on trade flows within and across membership groupings as well as the effect of PTAs on members' trade with Asian countries. On the basis of these estimates, we are able to categorize 11 major PTAs into those that increase intrabloc trade at the expense of their respective imports from the rest of the world; those that expand their respective trade among their members without reducing their trade with nonmembers; and those that reduce trade with nonmembers without significant changes in intrabloc trade. The authors also show that PTAs have augmented trade in Asia.

I. INTRODUCTION

The past few years have seen a sharp upturn in interest and activity in the formation of preferential trading arrangements (PTAs) in the Asian and Pacific region. Japan and Singapore recently signed an Economic Partnership Agreement in February 2002. Singapore also signed a bilateral trade agreement with New Zealand in 2001. Japanese policymakers have proposed a Japan-ASEAN Comprehensive Economic Partnership, and an ASEAN-People's Republic of China Free Trade Area was proposed by the People's Republic of China (PRC) and endorsed by ASEAN's ten leaders in the organization's ministerial meeting in Brunei in October 2001. In February 2002, government representatives of 14 Pacific Island nations met and agreed to form a PTA. These recent events follow more than a decade of increasing numbers of PTAs in the Asian and Pacific region and a similar upsurge in the number of PTAs in the world as a whole in the late 1980s and early 1990s. At present, about 97 percent of total global trade involves countries that are members of at least one PTA. This compares with a 72 percent share in 1990.

The increased interest in preferential trade agreements raises the important question of whether these more limited, often regionally based, trading arrangements are beneficial to Asian economies. As PTAs become a more commonly considered policy option, it is increasingly important to evaluate how the economic effects of PTAs compare to the effects of broader multilateral trading arrangements as well as how the PTAs affect world trade flows in general.

This paper focuses on the latter question. The following section describes the debate over PTAs' effects on world trade flows and provides some background on the PTAs we include in the analysis. Sections III and IV present empirical and analytical explorations of trade flows within and across PTAs. We first present a set of descriptive measures of trade flows and Section V presents the result of an augmented gravity model that estimates the effect that PTAs have on trade flows after controlling for nonpolicy determinants of trade. Following Soloaga and Winters (2001), we use a combination of dummy variables in the gravity model that allows us to separately identify the effects of PTAs on intrabloc trade as well as trade between members and the rest of the world. Our estimating equation also includes a set of dummy variables to identify the impact that PTAs have had on trade with Asian countries in particular. Another contribution is to estimate the model using data covering the years 1980 to 2000, a panel that allows us to consider how the Asian financial crisis influenced trade flows and the effects of PTAs on trade flows.

Our main finding is that the effect of PTAs on trade flows varies widely across PTAs. We estimated large positive "intra-bloc trade" effects for the Andean Pact, Economic Cooperation Organization (ECO), European Free Trade Association (EFTA), Mercosur, South Asian Preferential Trade Arrangement (SAPTA), and South Pacific Regional Trade and Economic Cooperation

Agreement (SPARTECA). These trade agreements appear to have had little effect on members' trade with countries outside the PTAs. Membership in the Asia-Pacific Economic Cooperation forum (APEC) and the European Union, in contrast, was estimated to significantly expand trade both between members of the PTA and between members and to the rest of the world. Our gravity model estimates indicate that CER had no incremental trade effect within or outside the bloc, and most of the estimation coefficients for this PTA were not statistically different from zero. Finally, we estimated the ASEAN Free Trade Area (AFTA) and North American Free Trade Area (NAFTA) to have little effect in altering intrabloc trade but they have reduced exports and imports between members and the rest of the world.

Acronym	Full Name of PTA	Member Countries
AFTA	ASEAN Free Trade Area	Brunei, Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam
Andean Pact	Andean Community	Bolivia, Colombia, Ecuador, Peru, Venezuela
ASEAN	Association of Southeast Asian Nations	Brunei, Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam
CER	Closer Economic Relations Trade Agreement	Australia and New Zealand
ECO	Economic Cooperation Organization	Afghanistan, Azerbaijan, Iran, Kazakhstan, Kyrgyz, Republic, Pakistan, Tajikistan, Turkey, Turkmenistan, and Uzbekistan
EFTA	European Free Trade Association	Iceland, Liechtenstein, Norway, and Switzerland
EU	European Union	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, United Kingdom
Mercosur	Southern Common Market	Argentina, Brazil, Paraguay, and Uruguay
NAFTA	North American Free Trade Agreement	Canada, Mexico, and United States
SAPTA	South Asian Preferential Trade Arrangement	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka
SPARTECA	South Pacific Regional Trade and Economic Cooperation Agreement	Australia, New Zealand, Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Papua, New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Western Samoa

II. PTAs: TRADE-CREATING OR TRADE-DIVERTING?

It is an open question whether PTAs create more trade than they divert. The lowering of trade barriers among block members may expose member economies to greater competitive pressures and open up larger markets for producers in member countries. Like other forms of trade liberalization, PTAs can increase competition in domestic industries, which can then spur productive efficiency gains among domestic producers and improve the quality/quantity of inputs and goods available in the economy (Dollar 1992, Sach and Warner 1995, Edwards 1998, and Wacziarg 2001). Producers can also benefit from the greater market size created through the PTA, which can expand opportunities for exporting products and lead to enterprise and employment growth. PTAs' small size can also ease trade-facilitating "deep integration" such as harmonizing standards or regulatory codes.

The main fear, however, is that PTAs may augment intrabloc trade by diverting trade away from nonmember economies (de Melo, Panagariya, and Rodrick 1992; Bhagwati and Panagariya 1996, and Schiff 1997). These policy-diverted trade flows may lead to nonoptimal patterns of specialization if the distribution of resources across members is not representative of the distribution of resources in the world. A country that is the relatively capital-rich member of a PTA might be relatively labor-rich in relation to the rest of the world, for example. PTA-induced specialization would not be optimal under global free trade (Panagariya 1994, Venables 2000). Complex and overlapping international and regional trading arrangements can create a *spaghetti bowl* of complex overlapping regulations and commitments that are difficult to disentangle and make it difficult to proceed in broader trade liberalization (Bhagwati et al. 1996, Krueger 1997, Wonnacott 1997).

In general, the greater the difference in the comparative advantages of member economies to a PTA and the closer the agreement approaches open trade across members, the greater the economic benefits of the agreement. However, in a world where trade interventions and market imperfections are commonplace, the effects of PTAs on trade flows are generally ambiguous analytically. This makes empirical examination of the effects of PTAs on trade flows essential to understanding these effects.

A. Overview of PTAs in Asia and the Rest of the World

Before reviewing the gravity model, it is useful to provide some description of PTAs in the Asian and Pacific region and to contrast these with PTAs in other regions. We also look at trends in trade during the years over which data used in the gravity model estimates are drawn.

There have been 30 multilateral PTAs and 58 bilateral arrangements notified to the World Trade Organization (WTO) worldwide over the past three decades. It is widely recognized that the actual number of new PTAs is larger, as only PTAs involving WTO member countries are obligated to report to the WTO. Most of these PTAs are between neighboring countries, and most fall short of being free trade agreements (FTAs) although they aspire to evolve to this form of PTA rather than to become customs unions (CU).

The degree of internal free trade varies greatly across PTAs, as does the breadth of the agreements beyond tariff reductions in terms of the sectors and goods covered and the extent of tariff reduction achieved. Agriculture is commonly excluded from the list of sectors where trade is liberalized. Most PTAs explicitly recognize the need for trade facilitation, harmonization of quality and other regulatory issues, infrastructure development, and streamlining customs procedures, but the extent of tangible activity in these areas tends to be limited for all but a few PTAs. Liberalization of trade in services is comparatively rare, although liberalization of within-bloc investment policies is more common.

As noted in Frankel and Wei (1998), formal regional trading arrangements are less common in Asia than in other regions. Also, PTAs in the Asian and Pacific region tend to have modest—at best—achievements in liberalizing trade between members. PTAs in Asia have generally made few tangible achievements in lowering tariffs and tariff reductions cover only a fraction of the goods traded between members. ASEAN, for example, likely the region's PTA that has expressed the clearest intention of becoming a true free trade area, achieved only modest liberalization until recent years. While formal national-level trading agreements generally attract the most attention, it is also important to note the substantial effort to facilitate trade via subregional economic zones (SREZs) and infrastructure policies. The theme chapter of the *Asian Development Outlook 2002* provides more background on these arrangements (ADB 2002).

The PTAs in the Asian and Pacific region tend to be fairly outward-looking and a large percentage of members' trade goes to nonmember countries. The trade flows considered in the next section of the paper generally illustrate this openness. This reflects the region's strong ties to European, some Latin American, and United States markets. Of all the PTAs reviewed, AFTA and APEC members have the strongest links to the international economy. This is reflected in the ratio of exports to gross domestic product (GDP). CER, SAPTA, and SPARTECA, on the other hand, have relatively low ratios of exports to GDP.

The PTAs also vary widely in the degree to which they institutionalize the rules of interaction between members. The majority of Asian PTAs are built on the premise of reciprocal trade concessions and thus require some sort of forum for negotiations. However, the frequency of negotiations varies from several times per year to once every few years. Dispute settlement mechanisms frequently specify some sort of bilateral negotiation, and only a few agreements set up a multinational court to arbitrate disagreements between members and oversee implementation of agreements. Many of the agreements are more ambitious in aspiration than in implementation. This informality contrasts with PTAs in other regions that establish stricter rules and more formal institutional arrangements for advancing trade liberalization and for resolving disputes between members (see *Asian Development Outlook 2002*, in particular Table 3.5 on pages 168 and 169).[1]

[1] Publication can be viewed online at http://www.adb.org/documents/books/ado/2002/pref_trade.pdf.

PTAs involving the Asian Development Bank's (ADB) developing member countries (DMCs) are a varied group. AFTA and SAPTA trade agreements were outgrowths of regional cooperation bodies (the South Asian Association for Regional Cooperation or SAARC and ASEAN, respectively). These bodies were formed for largely political reasons and encompass a wider range of cross-national interaction in cultural, health, environmental, and other areas as well as trade. AFTA has been very active in drawing up a timetable whereby tariffs would be reduced in progressive steps, with the intention of eventually evolving to a Free Trade Area. It also has an active Secretariat that addresses a number of issues of interest to members.

The Melanesian Spearhead Group (MSG) and SPARTECA are PTAs involving Pacific Island economies (the latter in association with Australia). Trade volume among member countries remains low and these economies remain oriented toward the larger Australian and New Zealand markets.

The ECO is a trade bloc that the Central Asian countries participated in after the fall of the Soviet Union disrupted existing patterns of trade among themselves and Russia. It is a much weaker arrangement than most PTAs. The focus is on providing broader institutions that facilitate bilateral agreements, more than cementing a PTA in itself. The few formal diplomatic arrangements for trade agreements have been offset by unilateral policy barriers and unpredictable changes such as Uzbekistan's imposition of exchange controls in October 1996, after a decline in cotton prices triggered a balance of payments crisis, and Russia's imposition of special tariffs after its crisis in 1998 (Pomfret 2001).

The Australia-New Zealand Closer Economic Relations (CER) Agreement, an industrial country PTA of the region, is one of the most advanced free trade areas in terms of implementation: the agreement has eliminated nearly all policy barriers to trade in both goods and services. The agreement not only eliminates tariffs, but also contains provisions for customs harmonization and common product standards.

APEC, the largest trading arrangement that ADB member countries are involved in, has few institutional structures as part of its overall philosophy of loose cooperation and "open" agreements. APEC's aspirations to create "open regionalism," while sometimes criticized as being unrealistic, offer a unique policy orientation for a trading arrangement. While the exact nature of APEC's trade liberalization agenda has been unclear, some credit APEC's efforts with contributing to the formation of FTAs among some of its member countries.

Bilateral PTAs have also been common among DMCs, especially among India and its neighbors, and the central Asian member countries. India gives duty free access to products from Bhutan, Nepal, and concessionary customs duties to products from Bangladesh. The list of central Asian bilateral agreements is quite long. Bilateral agreements between Georgia and Azerbaijan, Kazakhstan, and Turkmenistan that were negotiated in the second half of the 1990s after the goal of economic cooperation across the Commonwealth of Independent States (CIS) did not materialize. The individual agreements borrow from the CIS institutions—rules of origin, for example, are based on CIS guidelines. The Kyrgyz Republic was also highly involved in bilateral agreements and has reported bilateral PTAs with Armenia, Kazakhstan, Moldova, Russia, Ukraine, Uzbekistan, and Tajikistan. Other bilateral arrangements in the Asian and Pacific region include

PTAs between Laos and Thailand, New Zealand and Singapore, as well as the above-mentioned Australia-New Zealand CER.

Within the Asian region there is no common pattern in the extent of overlapping PTA membership. Aside from common membership in APEC, most of the other common membership involves bilateral agreements. SPARTECA and SAPTA members have relatively few commitments to other PTAs, most likely because these two agreements involve least developed countries. APEC, AFTA, and ECO have a higher number of other commitments because of the extent of bilateral agreements among member countries and AFTA country membership in APEC.

The region's PTAs vary with respect to the average level of income and economic development of their constituent economies (see ADO 2002, Tables 3.6 and 3.7 on pages 171 and 172), a factor that is likely to affect the degree to which they promote intrabloc trade. Some PTAs have members whose levels of economic development are fairly uniform with average per capita incomes falling in a narrow range, while others have members that are highly heterogeneous economically. We would expect higher intrabloc trade among the latter, all other things equal. SAPTA and ECO have the lowest average per capita incomes (less than $1000) and also the smallest variation in income per capita. Other PTAs in the region have higher average per capita incomes and there is substantial variation in the level of income among members. AFTA and SPARTECA have the highest variation in GDP within the member countries. AFTA brings high-tech industrial Singapore together with the primarily rural economies of Cambodia, Viet Nam, and Myanmar. SPARTECA's high coefficient of variation is due to the dispersion between the Pacific Islands and the New Zealand and Australian economies.

III. TRENDS AND GEOGRAPHICAL CONCENTRATION OF TRADE IN THE ASIAN AND PACIFIC REGION

A. Trends in Trade

World trade has grown substantially over the past half-century, particularly in the 1990s. The growth rates of the volume of world merchandise exports and world GDP have diverged since the 1950, indicating that the degree of trade has increased more rapidly than overall production (based on international trade data; see ADO 2002, Figure 3.1 on page 162 for a graphic presentation of these trends). The average annual growth of exports was 6.54 percent, which was higher than the corresponding expansion rate of GDP of 3.84 percent between 1950 and 2000. The tradable component of world GDP increased at the average annual rate of about 3.2 percent during the 1950s and 1960s, its growth significantly slowed down (to 1.5 percent or less) in the 1970s and 1980s. In the 1990s, the world's trade to GDP ratio reached its highest rate during the period under consideration surpassing levels of the 1970s and 1980s. In the 1990s, merchandise exports grew by 7.8 percent, or 4.7 percentage points higher than world GDP growth over the same period.

Exports of manufactured products have grown faster than those of agricultural and mining products (see ADO 2002, Table 3.2 on page 163 for figures). Manufacturing goods' share in total merchandise exports has increased, while the respective shares of mining and agriculture sector outputs have declined through the years. In 2000, the share of manufactured exports in total exports was estimated at 74.9 percent, up from about 70 percent in 1990. For agriculture, the share of total exports number was 9.02 in 2000, down from 12.23 percent in 1990, while mining fell from 12.23 to 9.02 percent over the same period.

Observed shifts in the types of manufactured exports suggest that these changes in trade flow are, at least in part, driven by policy changes. Exports of telecommunications and office equipment, items subject to low duties and taxes, doubled from 8.81 percent in 1990 to 15.19 percent of total merchandise trade in 2000. The exports of garments and textiles, a category of goods that is more heavily regulated in international trade agreements, such as goods covered by the Multi-Fibre Arrangement, grew more slowly than less regulated goods in the 1990s. Textiles, in particular, grew at a rate lower than that of total merchandise exports. While garment exports continued to be an above average performer, the increase in their share was less than one percent. The respective shares of textile and garment exports were 2.55 and 3.22 percent in 2000 compared to 3.08 and 3.19 percent in 1990.

B. Geographical Patterns of Trade

1. Measures of Geographical Concentration of Trade

A simple measure to describe geographical concentration of trade is the share of a region's trade to total world trade. We use exports as a summary statistic for country trade. The resulting statistic is

$$s_{r,W} = x^{T}_{r,W} \; / \; x^{T}_{W,W}$$

where $S_{r,W}$ is the share of region r to total world trade; $X^{T}_{r,W}$ is exports from region r to the world world trade; and $X^{T}_{W,W}$ is all world exports.

Another measure, called the intraregional or intrabloc trade share highlights the importance of intraregional trade:

$$s_{r,r} = x^{T}_{r,r} \; / \; x^{T}_{r,W}$$

The intraregional trade index is useful for comparing regional trade flows over time in a PTA with constant membership, as it automatically increases with r and thus can be misleading when comparing PTAs of differing sizes.

This problem may be overcome using the simple trade concentration ratio or trade intensity ratio (Frankel 1997, Petri 1993):

$$I_{r,r} = \frac{x^{T}_{r,r} / x^{T}_{r,W}}{x^{T}_{W,r} / x^{T}_{W,W}}$$

If this index is one, bloc members are trading with each other in the same intensity as they would have traded with nonmembers.

C. Regional Trade Shares

The shares of total world trade originating from various regions and economies have changed markedly over the last half-century.[2] North America, Western Europe, and Japan have consistently been the top three trading regions or countries. Together they account for 64.3 percent of world exports and 68.6 percent of imports. These figures are substantively higher than they were in 1948, at 59.2 and 61.2 percent, respectively. Recently, the share of the PRC in total world trade has been rising while that of Japan declined in 2000, having its peak in 1993. Like the PRC, the share of the group comprising Central and Eastern Europe, Baltic States, and CIS states has expanded in the 1990s.

Asia's share to total world trade of merchandise exports doubled over the past 50 years, while its share of world imports increased by only 60 percent. Eight countries account for 84 percent of Asia's export share in 2000 and 82 percent of its import share. These include PRC, Japan, and six East Asian trading countries. About half a century ago, the corresponding figures representing the contribution of these countries to Asia's share in world trade were respectively 32 and 36 percent.

D. Intrabloc Export Shares

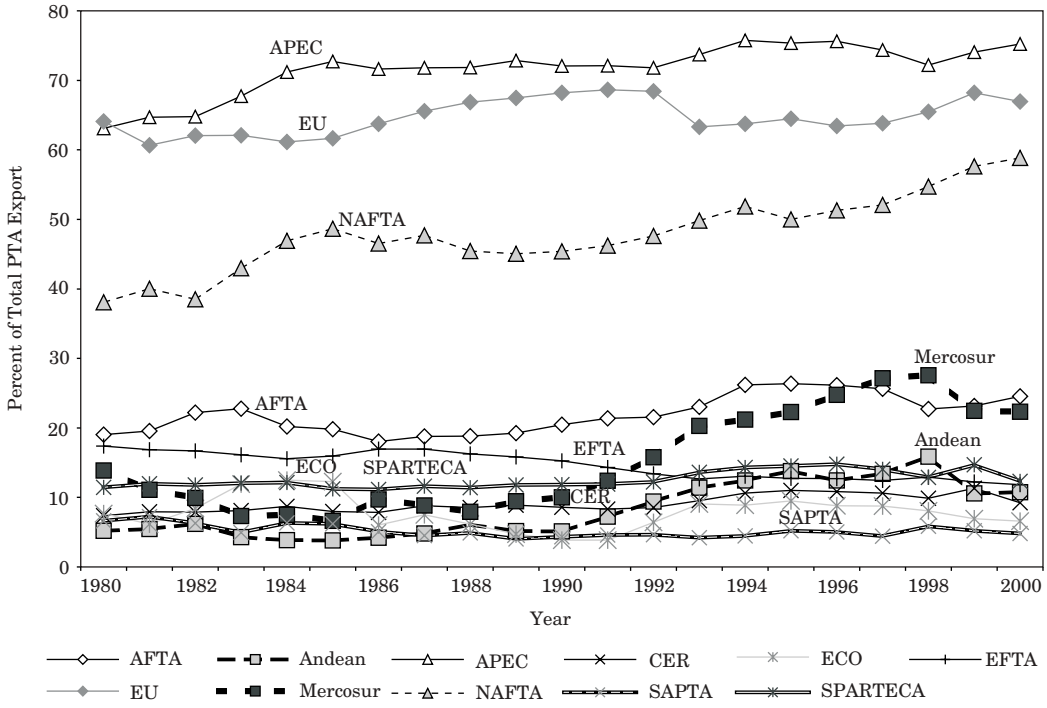
A useful measure for comparison across time is the share of trade among members of a given group of trading countries or region to total trade of the region. Higher intrabloc trade shares may indicate a possible preference of members of a region or bloc to trade with each other. Figure 1 shows the intrabloc shares of exports for eleven trade blocs while Table 1 lays out the five-year averages of these shares.[3] The blocs include AFTA, Andean, APEC, CER, ECO, EFTA, EU, Mercosur, NAFTA, SAPTA, and SPARTECA. The period covered in the table is from 1980 to 2000.

Regional export shares exhibit a moderately rising trend toward the end of the 1990s. This pattern is most noticeable in the case of NAFTA, APEC, and ASEAN. Moderate growth of the respective intraregional export shares of the PTAs covered in this analysis may more likely be attributed to changes in the composition of these groupings, rather than to any intensification of preference of PTA members to trade among each other. In 1994, Canada and the US brought

[2] Trends in world merchandise trade between 1948 and 2000 are summarized on Table 3.4 on page 165 of the ADO 2002.

[3] The basic data comes from the *International Trade Statistics 2001* (WTO 2001).

Figure 1. **Intrablock Export Shares of Selected PTAs, 1980-2000**



Sources: *Direction of Trade Statistics* (IMF 2001); authors' computation.

Mexico in to their FTA to form NAFTA. Chile, Mexico, and Papua New Guinea joined APEC in 1993, while Peru, Russia, and Viet Nam became members in 1998. As for ASEAN, Cambodia, Laos, Myanmar, and Viet Nam joined the organization between 1995 and 1998.

There have been instances where intrabloc trade shares fell (e.g., ECO, Andean Pact, and Mercosur between 1998 and 2000) as a result of external shocks and institutional changes happening within these PTAs. Political instability and economic restructuring in Central Asia combined with the lack of integration of ECO countries in the world economy explain the fall in the ECO trade share. External shocks associated with the Asian financial crisis likely contributed to a decline in Asian PTAs in the late 1990s.

Table 1 shows Asian PTAs (with the exception of APEC, which has many Asian countries as members but whose membership extends to North and South American countries as well) tend to have the larger share of their respective trade with nonmembers—particularly in comparison to EU and NAFTA. This observation may possibly be explained by the nature of the PTAs themselves, as promoting intrabloc trade among its members. That is, NAFTA or EU members comprise a natural bloc and the preferential policies have aggravated this natural attraction among members to trade with one another. This explanation can hardly be applied, however, to the case of APEC, to which we return shortly when we take up the apparent limitation of intrabloc trade shares for measuring the impact of PTAs.

Table 1. **Five-Year Average Intrabloc Export Shares of Selected PTAs, 1980 to 2000**

PTAs	1980-84	1985-89	1990-94	1995-99	2000
AFTA	20.75	18.94	22.51	24.81	24.54
Andean Pact	5.01	4.82	9.13	13.23	10.77
APEC	66.30	72.18	73.08	74.31	75.24
CER	7.99	8.41	9.13	10.73	9.25
ECO	9.34	7.33	6.42	8.41	6.58
EFTA	16.53	16.39	13.73	12.60	11.82
EU	62.00	65.05	66.47	65.08	66.94
Mercosur	9.94	8.52	15.94	24.84	22.35
NAFTA	41.29	46.68	48.17	53.15	58.82
SAPTA	6.30	4.93	4.44	5.14	4.81
SPARTECA	11.88	11.44	12.78	14.18	12.31

Source: Authors' computation based on *Direction of Trade Statistics* (IMF 2001).

On the other side of the coin, one possible reason why intrabloc trade shares are low for Andean, Asia-based PTAs, and Mercosur is that these are developing country PTAs. Their smaller per capita GDPs—in turn the outcome of their particular development status, economic shocks, or political instability—are such that their trade will tend to flow toward more wealthy countries even if their respective members share common borders. The Latin American PTAs—the Andean Pact and Mercosur—trade predominantly with countries outside of the PTA, which reflects the importance of the EU or US as a trading partner in that region.

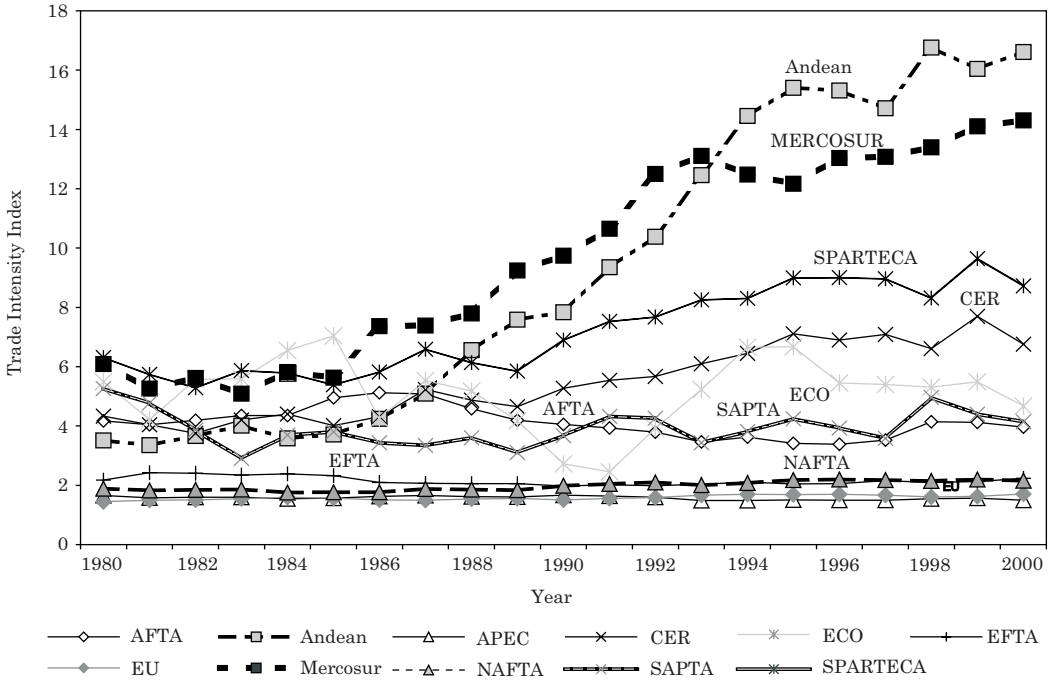
It warrants note that the high intrabloc shares for APEC, EU, and NAFTA do not necessarily indicate that the respective members of these prefer trade with other bloc members over trade with nonmembers. The index tends to be higher PTAs that include more or larger trading economies. Frankel (1997) cites the case of EU (previously the European Economic Community [EEC]) when the PTA expanded from six members in the 1960s to 12 in the 1990s, resulting in an increase of EEC's intraregional trade share from 49 percent in 1962 to 60 percent in 1990. The small intrabloc trade share of EFTA (i.e., 12 percent) may likewise be explained by the fact that this PTA has lost its members to EU.

E. Trade Intensity Indices

The weakness of intraregional trade shares as measures of trade orientation can be addressed by using simple concentration ratios or trade intensity indicators. The trade concentration ratio is obtained by dividing the intraregional trade share by the share of the region to total world trade. When the trade intensity indicator is equal to one, the PTA does not have any trade-diverting effect. That is, PTA members are trading among themselves at the same intensity as they would with nonmembers. If there is extra trade that goes on in the region beyond the normal pattern in the absence of the PTAs, then the trade intensity exceeds one.

The estimated trade intensity indices for the 11 PTAs from 1980 to 2000 are shown in Figure 2. In this figure and on Table 2, all the estimates are greater than one and display a similar pattern of results as in Frankel (1997).[4] The bigger PTAs such as APEC, EU, and NAFTA tend to have indices close to one. The smaller ones tend to have bigger ratios, with size of PTAs defined as the PTA's share of world trade. There are differences between our estimates and Frankel's due to the difference in membership in the periods that the two studies focus on. Frankel's period of analysis was from 1962 to 1994, while our analysis extends to 2000.

Figure 2. **Trade Intensities of Selected PTAs, 1980 to 2000**



Source: Authors' computation based on *Direction of Trade Statistics* (IMF 2001).

It is interesting to note that the Andean and Mercosur trade blocs have the highest trade intensities, an observation reported as well by Frankel. The Asian PTAs have lower corresponding estimates, no more than ten. The ECO bloc countries, comprising mostly Central Asian economies, apparently traded relatively more among themselves in the first half of the 1990s. Based on the data for the second half of that decade, this appears no longer true. This observation may indicate that these countries have adopted a more outward trade orientation in that period. A similar observation may be said of AFTA, but unlike in ECO the intensity index for the Southeast Asian bloc consistently fell in the 1990s. SAPTA countries formed their PTA in the middle of the 1990s. As shown in the figure, the trade intensity index for SAPTA rose to 1997 but fell subsequently.

[4] See Table 2.3 of Frankel (1997).

We computed the five-year averages of the intensity indices since 1980 in order to describe more clearly the pattern of trade concentration disclosed by the ratios (see Table 2). APEC and EU have consistently the two lowest trade intensities among the 11 PTAs examined. NAFTA and EFTA switched in the bottom third or fourth places, with NAFTA increasing its index in the 1990s. The other PTAs in Asia exhibit through time an increasing outward orientation. It is interesting to note that CER and SPARTECA appear to focus their trade within their bloc compared with AFTA, ECO, or SAPTA in the 1990s.

Table 2. **Five-Year Average Trade Intensity Indices of Selected PTAs, 1980 to 2000**

PTAs	1980-84	1985-89	1990-94	1995-99	2000
AFTA	4.22	4.78	3.78	3.72	3.97
Andean Pact	3.63	5.44	10.90	15.65	16.61
APEC	1.60	1.61	1.57	1.53	1.50
CER	4.15	4.62	5.81	7.08	6.76
ECO	5.48	5.24	4.20	5.67	4.67
EFTA	2.35	2.12	2.02	2.10	2.24
EU	1.52	1.54	1.60	1.66	1.70
Mercosur	5.58	7.48	11.70	13.16	14.31
NAFTA	1.83	1.82	2.04	2.18	2.15
SAPTA	4.10	3.46	3.90	4.22	4.14
SPARTECA	5.80	5.96	7.73	8.98	8.72

Source: Authors' computation based on *Direction of Trade Statistics* (IMF 2001).

Mercosur and Andean have the top two indices for the 1990s, with the latter exhibiting a sharp increase from being fifth in the first half of the 1980s to being at the top of the group in the second half of the 1990s. This indicates a surge of intrabloc trade activity among its members. Earlier and using intraregional trade share indices, we documented how Mercosur and Andean intrabloc exports had increased dramatically from 1995 to 1998 but had fallen from 1999 to 2000. What is interesting to note here is that by deflating the intraregional shares with the respective regional share of total world trade, we observe that Mercosur and Andean remained as having the highest intrabloc trade intensity. This has to indicate that the respective trade shares of these regions in world trade had obviously declined by a rate much greater than the decrease of intrabloc trade. Obviously, this highlights the effect of keeping track of general economic performance in assessing intraregional trade activity, and leads us to the analysis of trade flows using gravity models of trade.

IV. ANALYZING TRADE EFFECTS OF PTAs USING A GRAVITY MODEL

A. Basic Determinants

In this section, we outline the gravity model of bilateral trade flows used in analyzing the effects of PTAs.[5] In the model, trade between two countries is viewed as being positively affected by the economic mass of trading partners and negatively affected by the distance between the trading partners. Additional variables, such as physical area, population, indicators of cultural affinity, and sharing contiguous borders are usually added to empirical gravity models to elaborate on the "economic mass" and distance variables.

Under the model, the total merchandise exported by country i to country j (X_{ij}) is defined as follows:

$$X_{ij} = AY_i^{\beta i} Y_j^{\beta j} H_i^{\mu i} H_j^{\mu j} N_i^{\gamma i} N_j^{\gamma j} D_{ij}^{\alpha} \bar{D}_j^{\delta} \varepsilon_{ij} \quad (1)$$

where Y_i represents the gross domestic product of country i;
H_i represents the geographic size of country i;
N_i represents the population of country i;
D_{ij} represents the distance between country i and country j;
$\bar{D}_i$ represents the average distance between country i and its export markets in other countries;
A is a constant;
ε_{ij} is an error term; and
$\beta, \mu > 0$; and $\gamma, \alpha, \delta < 0$.

Taking the logarithm of (1), we get:

$$log\ X_{ij} = log\ A + \beta_i\ log\ Y_i + \beta_j\ log\ Y_{j\,+} \mu_i\ log\ H_{i\,+} \mu_j\ log\ H_j + \gamma_i\ log\ N_{i\,+} \gamma_j\ log\ N_j + \alpha\ log\ D_{ij} + \delta\ log\ \bar{D}_i + log\ \varepsilon_{ij} \quad (2)$$

The regression equation typically used:

$$log\ X_{ij} = log\ A + \beta_i\ log\ Y_i + \beta_j\ log\ Y_{j\,+} \mu_i\ log\ H_{i\,+} \mu_j\ log\ H_j + \gamma_i\ log\ N_{i\,+} \gamma_j\ log\ N_j + \alpha\ log\ D_{ij} + \delta\ log\ \bar{D}_i + \alpha\ ADJ_{ij} + cI_i + dI_j + log\ \varepsilon_{ij} \quad (3)$$

includes several dummy variables ADJ_{ij}, $I_{i,}$ and I_j to capture additional features of the country pair such as whether the trading partners have adjacent borders (ADJ) or either partner is an island economy (I). The error term is the standard Ordinary Least Squares (OLS) residual.

[5] Those responsible in developing the theory of the gravity model include Deardorf (1984); Helpman and Krugman (1985); and Helpman (1987). Frankel (1997, 61) cites Helpman and Krugman as the originators of the standard gravity model. The name used for their analytical framework is taken after Newton's theory of gravitation because of the analogy.

Per capita GDP is considered a key variable in the model, and larger economies are expected to engage in greater trade. However, a number of other factors act against the "gravity like" forces of economy size. Country geographic size and population are factors expected to reduce trade orientation by increasing the size of the domestic market and making economic activity more inwardly oriented. For example, the PRC and Japan both have large economies of roughly similar size, but trade little. This may be explained by the fact that the PRC has a lower per capita GDP, which weakens its capacity to attract trade from Japan. The PRC's large population gives Chinese producers plenty of consumers domestically and tends to dampen rather than augment exports. Frankel (1997) explains that countries with large populations tend to be more inwardly oriented than smaller countries because they are better able to exploit scale economies in their large domestic markets. This may explain why bilateral trade flows generally have an inverse relationship to population size. Like population, physical area is expected to reduce trade flows to the extent that countries with relatively small or limited natural resource endowments tend to be smaller and thus depend more on trade to obtain natural resources not available in the country.

Krugman (1991a) considers the distance between two countries to be an important determinant of geographical patterns of trade. Trade is attractive to the extent of the gains from trading less the transaction cost incurred in realizing such gains. Distance tends to increase the cost of transacting international exchange of goods and services. Beyond some distance, costs of consummating a cross-border exchange become prohibitive and accordingly no trade occurs. The farther apart two potential trading partners are, the more costly their bilateral trade, which erodes possible gains from trade. Linnemann (1966) categorizes the costs of international trade transactions into three types: (i) shipping cost, including freight and insurance; (ii) cost of time; and (iii) "psychic distance" or "cultural cost." Distance is not the only determinant for shipping cost. In examining data on freight, insurance, and shipping charges, Frankel (1997) notes that shipping costs vary widely across countries in Central Africa, where two remote trading partners may have relatively low aggregate shipping cost because only commodities that have relatively low shipping cost are traded. Accordingly, commodity composition of trade is needed in order to understand the relationship between distance and shipping cost.

Evidence suggests the effect of distance on trade flow has changed through time. Estimates from a gravity model carried out by Boisso and Ferrantino (1997) using data covering the years 1965-1985 suggest that distance had a deterrent effect on trade until the middle of the 1970s, but that this effect has declined since then. They claim that the average distance between trading partners increased in the postwar period, indicating that shipping costs have fallen steadily. Trading partners located far apart from each other will have to require more time in transporting goods between each other, which discourages trade. This cost includes the intrinsic value of the goods that is foregone if these are not delivered on time. The "psychic distance" or "cultural cost" refers to the lack of familiarity by the citizens of a country about their trading partners (Drysdale and Garnaut 1982). Cultural or linguistic affinity, shared borders, and whether the trading partner's territories are islands are factors that would tend to reduce cultural distance. Countries sharing a common language or having citizens belonging to the same ethnic group are more likely to transact business with each other.

In the specification of the basic gravity model used in this paper, following Soloaga and Winters (2001) we include two variables in our basic gravity model to capture different aspects of the influence of distance on trade flows. First, we include a variable measuring the distance between the capital cities for each pair of trading countries (D_{ij}). Second, we include a measure of the remoteness of a country captured by the average distance between the country and the country with which it trades ($\bar{D}_i$). In examining the effect of PTAs on the direction and volume of trade, it is important estimates controlled for the effect of distance and these other factors on trade flows. Next, we incorporate the variables representing PTAs, along with the other variables outlined as important in determining trade flows, into a gravity model.

B. Preferential Trade Agreements in the Gravity Model

In adopting the basic gravity model framework to study the effect of PTA membership on trade flows, Aitken (1973) and Braga, Safadi, and Yeats (1994) introduce a variable that takes the value of one if the two trading countries are both members of the PTA, and zero otherwise into the model. They interpreted the estimated coefficient of this dummy variable to be the sum of the trade-creation and trade-diversion effects of the PTAs. A positive coefficient for the variable indicates that the PTA tends to generate more trade to its members. One shortcoming of this initial approach is that a single variable cannot separate the effects of the PTA on trade creation and trade diversion, so the approach does not inform judgment regarding the relative magnitude of the creation and diversion effects.

Bayoumi and Eichengreen (1995) and Frankel (1997) add a second variable to enable trade-creating and trade-diverting effects of PTAs to be separated in the estimates. The variable takes the value of one if the importing country is a member of the PTA and the exporting country is a nonmember; zero if otherwise. The coefficient of the "extra-bloc" variable represents the trade of nonmembers diverted to the members of the PTA. A positive value suggests PTA members reduce imports to the bloc from nonmembers.

Soloaga and Winters (2001) introduce two additional PTA-related variables in order to capture the effects of PTAs on trade in general. One variable purportedly captures the impact of nondiscriminatory import liberalization enacted through the PTA, and takes a value of one if the importer is a member of a bloc and zero otherwise. This variable is different from the extra-bloc PTA variable of Bayoumi and Eichengreen (1995) and Frankel (1997), because that variable captures only the extra imports of members from nonmembers. Soloaga and Winters' specification considers the extra imports of members of the PTA from all trading partners regardless of their membership status. A final dummy variable introduced by Soloaga and Winters seeks to capture the extra exports of PTA members to all their trading partners, and takes a value of one if the exporter is a member and zero otherwise.

Equation (4) represents the decomposition of the trade effects of PTAs that Soloaga and Winters introduce:

$$log\ X_{ij} = log\ A + \beta_i\ log\ Y_i + \beta_j\ log\ Y_{j+} \mu_i\ log\ H_{i+} \mu_j\ log\ H_j + \gamma_i\ log\ N_{i+} \gamma_j\ log\ N_j + \alpha\ log\ D_{ij} + \delta\ log\ \bar{D}_i + a\ ADJ_{ij} + cI_i + dI_j + b_k P_{ki} P_{kj} + m_k P_{kj} + n_k P_{ki} + log\ \varepsilon_{ij} \quad (4)$$

where P_{ki} is a dummy variable that takes the value of one if exporting country i belongs to PTA k and zero otherwise; and P_{kj} is a similarly defined dummy variable for importing country j belonging to PTA k. The coefficient b_k on the interaction of P_{kj} and P_{ki} represents the additional exports from i to j that occur when both countries are members of the PTA k. The coefficient on P_{kj}, m_k, represents the additional exports from country i, not a member of PTA k, to a country j in PTA k. In other words, this dummy represents the additional imports that country j in PTA k receives from the world outside the PTA. The coefficient n_k has a similar interpretation as country i's exports to nonmembers of the PTA.

Soloaga and Winters' elaboration of the earlier models adapted to examine the trade effects of PTAs can be understood as seeking to measure the impact of PTAs on the trade of their respective members, and not just on intrabloc trade as in the traditional approach of Aitken (1973) and Braga, Safadi, and Yeats (1994). The trade liberalization effects of PTAs are highlighted. The trade of members of the OTA is measured through the sum of the coefficients of the intrabloc variable and the extra-import and extra-export variables. The total effect of the PTA on trade with bloc members is thus: $b_k + m_k + n_k$, or the sum of trade diversion (b_k) and general trade liberalization effects on exports (n_k) and imports (m_k). The separate dummy variables allow for us to assess the relative contribution of the PTA to narrow intrabloc trade as well as general trade with the world. In the most extreme trade-diverting case, the coefficient b_k would be positive (indicating increased exports from when both countries are members of PTA k), and $m_k + n_k$ is negative (indicating that being in PTA k depresses a country's imports from the rest of the world more than it increases its exports to the rest of the world, or vice versa, so that the net effect on trade flows between PTA members and the world is negative). In a case where the PTA expanded intrabloc trade but trade with the rest of the world increased as well, we might also have a positive intrabloc effect as well as positive import and export effects.

C. Modeling the Effect of PTAs on Asian Trade

Because the focus of the present study pertains to the effect of PTAs on Asian trade, we introduce Asian variables into the gravity model in order to capture the effect of PTAs on Asia's trade. Following Soloaga and Winters, we separate the extra imports and the extra exports that Asia gets because of a PTA. The "Asia extra import" effect of a PTA is denoted by the estimation coefficient in equation (5) of the interaction between the ASIA dummy variable j that takes the value of one if importer j is in Asia, and the dummy variable P_{ki} that is one if the exporting country i is a member of PTA k. The estimation coefficient, m_k^A, measures the extra imports that Asian countries obtain from PTA k, regardless of whether they are members of PTA k or not. The "Asian extra export" effect is defined similarly. n_k^A measures the added exports Asian countries provide

to member countries of PTA k. It is the estimation coefficient of the interaction between the dummy variable denoting membership of importer j to PTA k and the Asian status variable of exporter i. The estimation equation is thus:

$$\begin{aligned} log\ X_{ij} = {} & log\ A + \beta_i\ log\ Y_i + \beta_j\ log\ Y_{j\,+}\ \mu_i\ log\ H_{i\,+}\ \mu_j\ log\ H_j + \gamma_i\ log\ N_{i\,+}\ \gamma_j\ log\ N_j \\ & + \alpha\ log\ D_{ij} + \delta\ log\ \bar{D}_i + a\ ADJ_{ij} + cI_i + dI_j + b_k P_{ki} P_{kj} + \Sigma^{k}{}_{k=1}\ b_k P_{ki} P_{kj} \\ & + m_k P_{kj} + n_k P_{ki} + m_k{}^A P_{ki} ASIA_j + n_k{}^A P_{kj}\ ASIA_i + log\ \varepsilon_{ij} \end{aligned} \quad (5)$$

As noted above, Soloaga and Winters separate the effects of a PTA into two: first, the effect on trade diversion/augmentation (excess trade within the bloc relative to that predicted by gravity model factors) and second, general liberalization effects (excess imports and exports that members have to all countries whether they are members or not), alongside the non-PTA trade determinants included in the gravity model.

Thus for each trade bloc k, Soloaga and Winters identify the extent to which bloc k is trade-diverting, b_k, as against promoting its members' overall trade in general, (m_k+n_k). The total effect of the PTA k on its members' trade is $(b_k+m_k+n_k)$ or the sum of trade diversion and overall trade effects. This applies to PTAs that include Asian and non-Asian members. Under our specification, the effect of PTA k on members' trade with Asian members (above and beyond its trade with members in general) is given by: $m_k+n_k+m_k{}^A+n_k{}^A$. This comprises: (i) the effect on Asian imports from bloc k, regardless of whether Asian importers belong to PTA k or not $(m_k+m_k{}^A)$; and (ii) the effect on Asia's exports to bloc k, regardless of whether the Asian exporters are members of PTA k or not $(n_k+n_k{}^A)$.

D. Data and Estimation Issues

The data used in estimating the gravity model comes from the International Monetary Fund's (2001) *Direction of Trade Statistics* (DOTS). Eighty-three countries are included in the analysis, and bilateral exports for every pair of these countries are extracted from the DOTS database for the years 1980 to 2000.[5] The number of observations varies per year, and because the model was estimated in logarithms, instances of zero trade between two countries were dropped from the datasets used in estimations.[6] Dropping these cases from our estimation implies that our results should be interpreted as capturing the effect of PTAs on trade flows among trading countries, conditional upon the decision to trade having been made. It seems reasonable to assume that the source of truncation—the decision to not export at all to a particular country—is at best only slightly correlated with memberships in PTAs and geographic variables so that bias in the coefficients is minimal. This is clearly a second-best solution that affects the efficiency of the OLS estimates, but the alternative of explicitly modeling the decision to trade would, we feel, involve

[5] These 83 countries accounted for roughly 73 to 85 percent of total global exports during the period 1980 to 2000.

[6] Across the 83 countries included in our dataset, instances of no trade between pairs of countries accounted for between 16 and 20 percent of the total country pairs.

imposing too many assumptions on what are essentially highly idiosyncratic economic and political decisions.

Export values are expressed in real terms, being deflated using a merchandise price index (base year 1990) obtained from the WTO *International Trade Statistics 2001*, then transformed into logarithms for the estimations. Estimates are carried on using both single-year cross sectional data and panel data constructed from five-year intervals (1980, 1985, 1990, 1995 and 2000) of the available data. Population and GDP data was obtained from the World Bank's (2001) *World Development Indicators*. The distance between capital cities was obtained from John Haveman's (2002) International Trade Data website, while the data on land area was obtained from the *World Factbook* of the US Central Intelligence Agency.

V. EMPIRICAL RESULTS

In Tables 3 through 8, we report our gravity model estimation results. The model was estimated two ways. Estimates were carried out using cross sectional data sets for selected single years of data (i.e., 1980, 1985, 1990, 1995, and 2000). Second, longitudinal estimates were carried out using a panel of data constructed from 1985, 1995, and 2000 data. We discuss these results next, starting with Table 3, which summarizes the estimation coefficients for the basic variables of the gravity model. Tables 4 and 5 summarize the estimated effects of each of the 11 PTAs whose effects on trade flows were assessed. Across the six model estimates, between 68 and 73 percent of the variation of trade flows was explained by the variables included in the gravity model, including the variables capturing the effects of PTA membership.

A. Basic Determinants of Trade Flows

As reported in Table 3, GDP, the distance between capitals, country land area, and sharing a common border are statistically significant at the 95 percent confidence level and better still have the expected sign. Distance between two countries is shown to be the most important basic factor in determining trade flows. The one exception where the sign of the basic coefficients was contrary to expectations involves the estimated coefficient for the log of population in panel data estimates, for which the estimation coefficient is positive and statistically significant. This is contrary to the usual finding that larger countries tend to trade less. The effect of country remoteness on its trade was most often negative and significant, as one would expect, but in the cross sectional estimates for 1980 the variable was estimated to have a positive and significant effect.

Turning our attention to the estimated effects of PTA membership, results should be considered in three distinct areas. First, estimates allow examination of the effect of PTAs on the trade flows between PTA members. Second, results should be considered in terms of the effect of PTAs based in Asia and elsewhere on Asia's trade. Lastly, estimation results can be considered in terms of what they suggest regarding the effects of PTAs on total world trade.

Table 3. **Gravity Model Estimates, 1980-2000 (Part I: Basic Gravity Variables)**

	Annual Cross Section Data					
	1980	1985	1990	1995	2000	Panel Data[a]
Basic Gravity Variables	Coefficients					
Intercept	-1.183 **	-0.892 **	3.286 **	2.354 **	2.276 **	-1.026 **
LogGDP Exporter at 1990 prices	1.408 **	1.305 **	1.254 **	1.098 **	1.047 **	1.102 **
LogGDP Importer at 1990 prices	0.970 **	0.996 **	0.964 **	0.914 **	0.866 **	0.909 **
LogPopulation Exporter (*i*)	-0.209 **	-0.145 **	-0.172 **	0.003	-0.018	-0.030 *
LogPopulation Importer (*j*)	-0.026	-0.027	-0.033	0.008	0.031	0.031 *
LogDistance btw. trading partners (*i* & *j*)	-6.555 **	-6.693 **	-7.108 **	-6.192 **	-6.006 **	-7.162 **
LogAvg.Distance to export markets (*i*)	0.308 *	-0.025	-0.210 *	-0.266 **	-0.001	-0.165 *
LogArea Exporter (*i*)	-0.318 **	-0.306 **	-0.266 **	-0.137 **	-0.140 **	-0.173 **
LogArea Importer (*j*)	-0.198 **	-0.219 **	-0.188 **	-0.133 **	-0.154 **	-0.163 **
Dummy Var. Exporter *i* is an Island	0.079 *	0.069	0.100 *	0.173 **	-0.004	0.118 **
Dummy Var. Importer *j* is an Island	0.151 **	0.064	0.094 *	0.088 *	0.053	0.085 **
Dummy Var. for Common Land Border	0.312 **	0.426 **	0.521 **	0.516 **	0.450 **	0.346 **
Adjusted R Squared	0.679	0.684	0.731	0.718	0.708	0.707
Standard Error of the Estimate	0.760	0.783	0.779	0.797	0.852	0.697

**Significant at 99% confidence level; *significant at 95% confidence level
[a] Covers 1985, 1995, 2000.
Source: Authors' computation.

Estimates of the effect of different PTAs on the trade flows between members vary remarkably across PTAs. Based on our estimation results, we categorize PTAs into three groups based on whether they tend to foster intrabloc trade, foster greater trade with trading partners worldwide, or are estimated to have reduced intrabloc trade. In the next section, we discuss estimation results for particular PTAs, grouping PTAs according to their apparent trade-diverting or trade-augmenting effects.

B. PTAs Fostering Intrabloc Trade

As summarized in Table 4, the Andean Pact, ECO, EFTA, Mercosur, SAPTA, and SPARTECA are PTAs showing large positive "intra-bloc trade" effects. Each of these had positive and statistically significant coefficients for intrabloc trade, only small changes in their overall imports, and increases in their exports to the world over the period covered in the data.[7] This suggests membership in these PTAs led constituent economies to divert trade toward the economies of other members at the expense of trade with the rest of the world. We will discuss the estimates for each of these PTAs separately, and compare our findings to those of earlier research.

[7] To put these numbers in perspective, SPARTECA with a factor of 13.6 has a base of only about $120 million, implying that the incremental exports that the PTA is responsible for is equal to about $1.6 billion at 1990 prices.

Table 4. **Gravity Model Estimates, 1980-2000 (Part II: Effects of PTA Membership)**

Effects of PTA Membership (Andean, ECO, EFTA, Mercosur, SAPTA, SPARTECA)	Annual Cross Section Data					
	1980	1985	1990	1995	2000	Panel Data[a]
	Coefficients					
Andean Pact						
Intrabloc Exports (b_k)	0.813 **	0.499 *	0.950 **	1.349 **	1.611 **	0.942 **
Overall Bloc Imports (n_k)	-0.106	-0.140 *	-0.213 **	-0.169 *	-0.369 **	-0.076 *
Overall Bloc Exports (m_k)	-0.010	-0.090	0.051	-0.041	-0.083	-0.051
Asian Imports from Bloc (Am_k)	-0.162	-0.124	0.005	-0.317 *	-0.106	-0.298 **
Asian Exports to Bloc (An_k)	-0.164	-0.312 *	-0.088	-0.055	0.110	-0.171 *
ECO						
Intrabloc Exports (b_k)	0.745 *	0.500	0.116	1.698 **	1.712 **	0.276
Overall Bloc Imports (n_k)	-0.038	0.185 *	0.367 **	-0.247 **	-0.151 *	0.112 *
Overall Bloc Exports (m_k)	-0.254 **	-0.017	0.221 **	0.187 **	0.035	0.078 *
Asian Imports from Bloc (Am_k)	-0.026	-0.129	0.159	-0.266 **	-0.094	-0.056
Asian Exports to Bloc (An_k)	-0.053	-0.223	-0.114	-0.284 **	-0.291 **	-0.229 **
EFTA						
Intrabloc Exports (b_k)	0.380 *	0.415 *	0.444 **	0.405 *	0.453 **	0.441 **
Overall Bloc Imports (n_k)	-0.242 **	-0.284 **	-0.356 **	-0.214 **	-0.232 **	-0.258 **
Overall Bloc Exports (m_k)	0.026	0.023	0.010	0.101 *	0.111 *	0.053
Asian Imports from Bloc (Am_k)	-0.129	-0.089	-0.140	-0.037	-0.091	-0.092 *
Asian Exports to Bloc (An_k)	-0.292 **	-0.100	0.098	-0.104	-0.074	-0.101 *
Mercosur						
Intrabloc Exports (b_k)	0.793 **	0.749 **	0.588 *	0.728 **	0.924 **	0.599 **
Overall Bloc Imports (n_k)	0.127	-0.031	0.123	0.087	0.092	0.070
Overall Bloc Exports (m_k)	0.384 **	0.731 **	0.761 **	0.558 **	0.421 **	0.455 **
Asian Imports from Bloc (Am_k)	-0.470 **	-0.335 *	-0.561 **	-0.397 **	-0.401 **	-0.189 *
Asian Exports to Bloc (An_k)	-0.168	-0.260 *	-0.164	-0.010	-0.006	-0.025
SAPTA						
Intrabloc Exports (b_k)	0.690 **	0.464 *	0.393 *	0.505 *	0.579 **	0.475 **
Overall Bloc Imports (n_k)	0.027	0.072	-0.002	0.106	-0.110	0.022
Overall Bloc Exports (m_k)	0.251 **	0.302 **	0.343 **	0.258 **	0.188 **	0.264 **
Asian Imports from Bloc (Am_k)	-0.177	-0.282 *	-0.417 **	-0.262 *	-0.168	-0.325 **
Asian Exports to Bloc (An_k)	0.049	0.137	0.309 *	0.132	0.183	0.047
SPARTECA						
Intrabloc Exports (b_k)	1.292 **	1.122 **	0.964 **	1.157 **	1.042 **	0.972 **
Overall Bloc Imports (n_k)	0.053	0.068	-0.009	-0.234 *	-0.500 **	-0.054
Overall Bloc Exports (m_k)	0.055	0.327 *	0.238 *	-0.002	-0.443 **	0.287 **
Asian Imports from Bloc (Am_k)	-0.107	-0.240	-0.089	0.485 **	1.064 **	0.000
Asian Exports to Bloc (An_k)	0.060	0.318 *	0.421 **	0.434 **	0.647 **	0.392 **
Adjusted R Squared	0.679	0.684	0.731	0.718	0.708	0.707
Standard Error of the Estimate	0.760	0.783	0.779	0.797	0.852	0.697

**Significant at 99% confidence level; *significant at 95% confidence level
[a] Covers 1985, 1995, 2000.
Source: Authors' computation.

Table 5. **Gravity Model Estimates, 1980-2000 (Part III: Effects of PTA Membership)**

Effects of PTA Membership (AFTA, APEC, CER, EU, NAFTA)	Annual Cross Section Data					
	1980	1985	1990	1995	2000	Panel Data[a]
	Coefficients					
APEC						
Intrabloc Exports (b_k)	0.155	0.322 **	0.368 **	0.363 **	0.411 **	0.429 **
Overall Bloc Imports (m_k)	0.198 **	0.308 **	0.454 **	0.390 **	0.382 **	0.356 **
Overall Bloc Exports (n_k)	0.356 **	0.526 **	0.641 **	0.589 **	0.638 **	0.535 **
Asian Imports from Bloc (Am_k)	-0.234 *	-0.372 **	-0.359 **	-0.232 **	-0.163 *	-0.332 **
Asian Exports to Bloc (An_k)	0.027	-0.215 *	-0.211 *	-0.268 **	-0.464 **	-0.382 **
EU						
Intrabloc Exports (b_k)	-0.246 **	-0.256 **	-0.112	0.051	0.046	0.017
Overall Bloc Imports (m_k)	0.228 **	0.364 **	0.283 **	0.159 **	0.305 **	0.161 **
Overall Bloc Exports (n_k)	0.168 **	0.339 **	0.156 **	0.256 **	0.403 **	0.215 **
Asian Imports from Bloc (Am_k)	-0.375 **	-0.333 **	-0.269 **	-0.253 **	-0.252 **	-0.318 **
Asian Exports to Bloc (An_k)	-0.219 **	-0.407 **	-0.252 **	-0.118	-0.008	-0.190 **
CER						
Intrabloc Exports (b_k)	-0.834	-0.503	-0.325	-0.299	-0.268	-0.435
Overall Bloc Imports (m_k)	0.100	0.227	-0.066	0.076	0.498 **	0.309 **
Overall Bloc Exports (n_k)	-0.052	0.057	-0.162	0.029	0.331 *	-0.093
Asian Imports from Bloc (Am_k)	0.347	0.222	0.301	-0.158	-0.623 **	0.214 *
Asian Exports to Bloc (An_k)	-0.104	-0.401 *	-0.409 *	-0.474 *	-0.653 **	-0.516 **
AFTA						
Intrabloc Exports (bk)	0.166	-0.181	0.319 *	0.422 **	0.144	0.026
Overall Bloc Imports (mk)	-0.039	-0.232 **	-0.128 *	-0.177 **	-0.325 **	-0.193 **
Overall Bloc Exports (nk)	-0.113	-0.117	-0.196 **	-0.063	-0.122 *	-0.050
Asian Imports from Bloc (Amk)	0.377 **	0.400 **	0.346 **	0.144	0.372 **	0.264 **
Asian Exports to Bloc (Ank)	0.057	0.267 *	0.162	0.126	0.318 **	0.191 **
NAFTA						
Intrabloc Exports (b_k)	0.250	0.112	-0.066	0.326	0.282	0.210
Overall Bloc Imports (m_k)	-0.187 *	-0.264 **	-0.332 **	-0.390 **	-0.188 *	-0.355 **
Overall Bloc Exports (n_k)	-0.333 **	-0.422 **	-0.427 **	-0.416 **	-0.575 **	-0.480 **
Asian Imports from Bloc (Am_k)	0.348 *	0.346 *	0.079	0.014	0.115	0.119
Asian Exports to Bloc (An_k)	0.326 *	0.235	0.282 *	0.451 **	0.799 **	0.500 **
Adjusted R Squared	0.679	0.684	0.731	0.718	0.708	0.707
Standard Error of the Estimate	0.760	0.783	0.779	0.797	0.852	0.697

**Significant at 99% confidence level; *significant at 95% confidence level
[a] Covers 1985, 1995, 2000.
Source: Authors' computation.

The estimated coefficients for PTA affects on intrabloc trade, overall imports, and overall exports for EFTA display a pattern of results that suggests the positive incremental effect of membership in this PTA on intrabloc exports was accompanied by declines in overall imports of the bloc.[8]

A similar pattern in the results was found for the Andean Pact, and estimates of the intrabloc trade coefficient for this PTA were positive and statistically significant. The magnitude of the intrabloc trade diversion effect obtained in this study is about a third lower than the corresponding estimates of Soloaga and Winters (2001). The estimates also show membership in the Andean Pact was generally associated with significantly lower total import levels although the effects on overall exports were, in most instances, did not allow rejection of the null hypothesis that the PTA had no effect. Our results contrast with those of Frankel (1997), who found that the intrabloc trade variable for the Andean Pact usually had statistically significant negative coefficients.

The estimates for the intrabloc trade variable for Mercosur are all statistically significant and positive, while estimated coefficients for the overall import variable are not significant although most are positive. These results are consistent with those obtained by Soloaga and Winters (2001) and Frankel (1997). Results imply that the increased intrabloc trade within Mercosur has not eliminated Mercosur's imports from the world. Estimates show Mercosur membership is associated with positive and statistically significant effects on total exports, which differs from the results obtained by Soloaga and Winters (2001).

The estimate of the intrabloc trade effects of Mercosur membership for the most recent year for which data is available suggests the tendency toward intrabloc trade orientation among bloc members is growing stronger, not weaker as suggested by Preusse (2001). In this paper, Preuse argues there have been two phases in Mercosur's implementation. In the first phase, intra-Mercosur exports expanded by 28.4 percent, which the author attributes to the increasing significance of regional production. Intra-Mercosur investments have accompanied the integration process of the region, and have contributed to greater regional production. The strong trade-diverting effects of the first phase were followed by the aborted formation of a full-fledged customs union in 1995 in the wake of the Asian crisis and economic recession of the region, which Preuse argues has reduced intrabloc trading bias in the PTA.

Yeats' (1998) research suggests an explanation for the results obtained in the present study. In assessing Mercosur's trade performance in the first half of the 1990s, Yeats noted that intrabloc trade increased substantially at the expense of trade with nonmember countries. This stemmed from the group's "discriminatory tariffs against nonmembers, which are four to six times higher" than those of the EU or NAFTA. It was further noted that the intraregional trade and export growth among members was concentrated in products that were not competitive outside of the region. Extending the analysis to 2000, our finding that Mercosur positively and significantly influenced the intrabloc trade share may well reflect the impact of accumulated inefficiencies induced by relatively high discriminatory protection maintained earlier.

[8] Except for estimates carried out using data from the second half of the 1990s, EFTA's intrabloc trade effect was not accompanied by a significant increase in overall exports of EFTA to the world.

The coefficients of the intrabloc trade are statistically significant and positive across all our estimates for SAPTA. These findings differ from that of Frankel and Wei (1998) who found SAPTA membership was associated with lower levels of trade between members than would normally be expected. The results reported in Table 4 indicate that SAPTA members traded at nearly twice the level they would be expected to trade given the sizes of their economies, proximities, and similar characteristics. This is based on the coefficient of the intrabloc trade variable obtained in our panel data estimate. The estimates of the impact of SAPTA membership on overall imports are all not significantly different from zero, while estimates of the effect of membership on total exports are positive and statistically significant. This result suggests there is an orientation toward intrabloc trade among SAPTA members. Members export at a 27 percent higher rate than the global average according to our estimates.

The results for ECO suggest membership in this PTA had a positive and statistically significant effect on intrabloc trade between members in the early 1980s. During these same years, membership in ECO was associated no significant effects on overall imports and a statistically significant decline in member economies' overall exports. However, these effects dissipated over time as ECO members appear to have carried out structural adjustment and opened up their economies to global trade after 1985. Results in the second half of the 1980s differ markedly from the earlier effects. The estimated effect of membership on intrabloc trade was not significantly different from zero, while membership was associated with significantly higher total imports and exports in estimates carried out using data from 1980 and 1990. However, in 1995 and 2000 estimates, ECO membership was once again associated with greater intrabloc trade. Membership in these latter years was also associated with lower total imports and higher total exports. Particular caution is warranted in interpreting the gravity model results for ECO since the transition economies of Central Asia that make up ECO were undergoing dramatic changes in the structure of their economies during the years over which the models were estimated. Basic changes in the structure of economies, sectoral production, and prices may have had more profound implications for trade flows to and from these countries than changes in tariffs or other trade policies carried out under the aegis of ECO. Accordingly, one can reasonably expect that much of the change in trade flows captured in our estimates were likely due in greater part to the broader economic restructuring that was under way rather than to PTA membership.

A final PTA that estimates indicate fostered greater intrabloc trade was SPARTECA, which involves Australia and New Zealand and several Pacific Island countries. The regression results indicating a strong intrabloc effect are expected. Trade tended to flow more intensely among the smaller Pacific Island economies that are members of SPARTECA and between Australia and New Zealand than between the Pacific Island economies and their larger neighbors—relative to the latter's level of trade with the rest of the world. The potential for more trade between Pacific Island economies and Australia and New Zealand is limited by the small size of the smaller economies' domestic markets. The signs of the coefficients of the intrabloc dummy variable for SPARTECA membership are positive and statistically significant in our estimates. The estimated coefficient for total imports went from being not significantly different from zero in the 1980s

to being negative and statistically significant in the 1990s. The associated expansion of intrabloc trade over time appeared to occur at the expense of member economies' imports from the rest of the world. The estimates of the coefficients measuring the effect of membership on total exports were all positive and statistically significant in our estimates.

C. PTAs Fostering Greater Intrabloc Trade and Greater Trade with the Rest of the World

Membership in APEC and EU was estimated to significantly expand trade between members of the PTA as well as between members and to the rest of the world. These results are summarized on Table 5.

The signs of the coefficients of variables capturing the effect of APEC membership on intrabloc trade and on total imports and exports are all positive and statistically significant. This suggests that APEC is achieving its goals of open regionalism and augmenting total trade. The results obtained in our estimates are consistent with those of Frankel (1997). As with Frankel's estimate, our estimated coefficient for the intra-APEC export dummy variable is large and positive and is statistically significant. The tendency for greater intrabloc trade identified in the analysis was accompanied by strong tendencies toward greater trade with the rest of the world as well. While some researchers have argued that the size of the coefficient of the intrabloc variable for APEC obtained in Frankel's estimate was too high (Polak 1996), Frankel attributed the strong effect to the large share of total world trade accounted for by APEC member economies. He also noted the large coefficient estimate was not due to the inclusion of *entrepôt* economies, as his estimates excluded Singapore or Hong Kong, China from APEC's to control for the effect "extra open" economies might have on estimates. Frankel concludes that the "APEC effect is genuine" and quoting Garnaut (1994), he maintains that the trade-augmenting impact identified for APEC is consistent with the type of integration "where the initiative has remained primarily with enterprises acting separately from state decisions, and where official encouragement of regional integration does not include major elements of trade discrimination."

Across the years for which the gravity model was estimated, the estimated effect of EU (in the 1980s) was positive although not statistically significant. All the estimates of the effect of EU membership on total imports and total exports are positive and statistically significant. These results differ from those of Soloaga and Winters (2001), which found that EU has fostered neither overall trade nor intrabloc trade, as would ordinarily be expected. Soloaga and Winters offer the explanation that deeper economic integration between member economies has reduced EU's imports from nonmembers. The differences in these estimation results might be explained by differences in the data used to estimate the gravity model across the two: our study and the earlier one by Soloaga and Winters. Soloaga and Winters used data on imports while our estimates are based on exports data.[9] Bayoumi and Eichengreen (1997) observed that the strong intrabloc effect of EEC in the 1980s appeared to have dissipated by the early 1990s.

[9] It is unclear how use of exports versus imports affects results, although Havrylyshyn and Pritchett (1991) noted some of their gravity model estimates changed depending upon whether they used data on imports or exports to estimate the model.

Our gravity model estimates indicate that CER had no incremental trade effect within or outside the bloc, and most of the estimation coefficients for this PTA were not statistically different from zero. Coefficients associated with trade flows between member countries are no higher than we would expect them to be given the size of countries' economies and their proximity. The signs of the coefficients of the intrabloc and Asian export variables are almost all negative, except for 2000. In the estimates carried out using data from 2000, many coefficients are statistically significant and suggest CER did not divert trade. The coefficients for the variables capturing the effect of the PTA on total imports and exports are positive and statistically significant.

Frankel's (1997) estimation results for the intrabloc trade effect for CER differ from ours. He found the intrabloc trade effects of the PTA were positive and statistically significant. Frankel used total trade data, i.e., sum of exports and imports while we use export data, which may account for the different results obtained in the two studies. Differences in the model specification (e.g., exclusion of language dummy variables in our estimates and the use of several additional dummy variables to gauge the effect of PTA membership on trade included in our model) may also account for the different results obtained.

D. PTAs that Reduced Gross Trade but did not Change Intrabloc Trade Significantly

In our estimates, AFTA and NAFTA were PTAs that showed no effect in altering intrabloc trade but appeared to have reduced exports and imports between members and the rest of the world. The estimates obtained in this study for the coefficients of the intrabloc, overall import, and overall export variables for ASEAN are all not statistically significant. This adds yet another study with results for AFTA that disagree with those obtained in earlier research. Frankel (1997), for example, found membership in AFTA was associated with significantly more intrabloc trade than would otherwise have been expected. Soloaga and Winters (2001) found AFTA had a negative and statistically significant effect on intrabloc trade. A possible explanation for why the results of this study differ from earlier research is that the data used in our estimates included new members of ASEAN, namely Cambodia, Lao PDR, Myanmar, and Viet Nam; while the earlier estimates did not. As a group of countries that are less developed and less integrated into the global economy than the previous five member countries of ASEAN, their inclusion in the gravity model may have diluted the effect of ASEAN on its trade within and outside the PTA.[10]

Estimation results related to the effect of NAFTA on intrabloc trade and on the trade of member economies with the rest of the world failed to reject the null hypothesis that the PTA has no effect. Earlier studies (Frankel 1997, Soloaga and Winters 2001) had earlier documented a similar result, so consensus is building that NAFTA has not affected the trade orientation of its constituent economies. In our panel estimates, NAFTA membership was associated with lower although not statistically significant intrabloc trade.

[10] Sensitivity analysis suggests that estimate results are robust to changes in the specification of the PTA membership variables, but that inclusion of new ASEAN members in the dataset did significantly influence estimation results.

Our results suggest NAFTA members' total exports and total imports were lower than expected, and that the negative effect grew stronger over time. Soloaga and Winters had obtained a similar result, that the coefficient for overall imports of NAFTA members was negative and statistically significant after 1986. This same study found the coefficients capturing the effect of the PTA on total exports of members went from being positive in the early 1980s (specifically, 1980 to 1983) to being negative in the period after 1984. The results of these two studies suggest that NAFTA members may be reducing their overall trade with the rest of the world. Although our results are essentially the same as those obtained in earlier research, what is new about our results is that we have reached this conclusion using the latest trade data.

E. Gross Intrabloc Effect

Table 6 summarizes the effects of PTAs on the trade flows with their members and non-members. The measure used is the anti-logarithm of the sum of the coefficients of the intrabloc, overall import and the overall export variables of the PTA minus one. Soloaga and Winters refer to this sum of these logarithms as the "gross intra bloc" effect. This exercise involves adding up the coefficients reported in Tables 3 through 5. Since not all of these coefficients are statistically significant, we accept the hypothesis that the coefficients having estimates that are not significant at a 95 percent confidence level or higher are equal to zero.

The estimates of the total trade effects vary markedly across the PTAs treated in our model estimates. APEC, ECO, and Mercosur appear to be the PTAs having the greatest impact on members' trade flows. At the other extreme, estimation results suggest AFTA and NAFTA have reduced the trade of their member economies. The overall effect of the 11 PTAs is an expansion of gross intrabloc trade by a factor of 7.8 according to our estimates. Earlier studies of the effects

Table 6. **Summary of Effects of PTAs on Intrabloc Trade Flows, and Imports and Exports of the Bloc with the Rest of the World**

	1980	1985	1990	1995	2000	Average
AFTA	0.00	-0.41	-0.01	0.76	-0.64	-0.06
Andean Pact	5.50	1.28	4.46	14.15	16.45	8.37
APEC	2.58	13.34	28.07	20.94	25.95	18.18
CER	0.00	0.00	0.00	0.00	5.74	1.15
ECO	2.10	0.53	2.87	42.44	35.35	16.66
EFTA	0.37	0.35	0.22	0.96	1.15	0.61
EU	0.41	1.80	1.75	1.60	4.10	1.93
Mercosur	14.01	29.19	21.37	18.28	21.15	20.80
NAFTA	-0.70	-0.79	-0.83	-0.84	-0.83	-0.80
SAPTA	7.71	4.84	4.44	4.79	4.85	5.33
SPARTECA	18.60	27.13	14.93	7.37	0.26	13.66
Overall Average						7.79

Source: Authors' computation based on statistically significant coefficients on Tables 4 and 5.

of PTAs on trade flows that have applied gravity model estimates have obtained similarly large effects of PTA membership (e.g., Frankel 1997, Soloaga and Winters 2001).

F. Effect of PTAs on Asian Trade

Our estimation model included two additional variables to capture the effect of PTAs on the trade of Asian region as a whole. The estimated coefficients for the two dummy variables representing Asian imports from and Asian exports to each PTA are also reported in Tables 4 and 5. Overall, our results suggest that PTAs fall into two groups with respect to their effects on Asian trade. In the first group, which tended to have insignificant intrabloc trade effects and neutral impact on member economies' trade with the world (i.e., AFTA and NAFTA), members generally had higher than expected levels of trade with Asia. The other PTAs, which displayed significant intrabloc trade effects and in some cases positive and significant effects on total trade, showed either no significant effects or negative and significant effects on trade with Asia.

Considering PTAs as a whole, empirical estimates suggest trade in Asia has been augmented by the existence of PTAs, including both PTAs within the region as well as PTAs based in other regions. As summarized in Table 7, results provide little support for the assertion that PTAs have diverted trade to member countries at the expense of trade outside the PTAs. The measure of this trade diversion/augmentation used in Table 7 is the anti-logarithm of the sum of the estimated coefficients for overall import, overall export, Asian import, and Asian export dummy variables in equation 4 minus one.[11]

According to our gravity model estimates, the general effect of PTAs on trade in the Asian and Pacific region is small compared to the effect PTAs have in other regions. While some individual

Table 7. **Summary of Effects of PTAs on Asia's Imports and Exports with the Rest of the World**

	1980	1985	1990	1995	2000	Average
AFTA	1.38	1.72	0.05	-0.33	0.75	0.71
Andean Pact	0.00	-0.65	-0.39	-0.67	-0.57	-0.46
APEC	1.09	0.77	2.36	2.01	1.47	1.54
CER	0.00	-0.60	-0.61	-0.66	-0.64	-0.50
ECO	-0.44	0.53	2.87	-0.75	-0.64	0.31
EFTA	-0.71	-0.48	-0.56	-0.23	-0.24	-0.44
EU	-0.37	-0.08	-0.17	0.45	1.86	0.34
Mercosur	-0.18	0.37	0.59	0.45	0.05	0.25
NAFTA	0.42	-0.54	-0.67	-0.56	0.09	-0.25
SAPTA	0.78	0.05	0.72	-0.01	0.54	0.42
SPARTECA	0.00	3.42	3.56	3.85	4.85	3.14
Overall Average (weighted to trade shares)						0.67

Source: Authors' computation based on statistically significant coefficients on Tables 4 and 5.

[11] The formula used is: $Y = AX^{\beta} 10^{\beta j(a_1 D_1 + a_2 D_2)}$.

PTAs (e.g., Andean, CER, EFTA, and NAFTA) are estimated to reduce trade flows between Asia and the member economies, the overall net effect of the 11 PTAs was positive. The 11 PTAs treated in our estimations are found to be associated with a net expansion of trade within Asia and between Asia and other regions by a factor of 0.67 according to the gravity model estimates presented in this paper. The figures reported on Table 7 reflect the sum of the PTA's effects on overall imports and exports, and on imports and exports between member economies and Asian and Pacific economies. In some cases (e.g., NAFTA), the positive effect of the PTA on Asian trade is outweighed by the negative effects on overall trade. In the case of CER, negative effects of PTA membership on overall trade flows and on trade flows between Australia and New Zealand, and on trade flows with Asian and Pacific countries combine to generate a stronger negative effect. The net influence of PTAs based in Asia's subregions, namely those involving countries of the South Pacific and Oceania (SPARTECA), South Asia (SAPTA), and Southeast Asia (AFTA), appears to have been to induce expanded trade in the greater Asian and Pacific region.

The effect of the EU on Asian trade suggested by estimates indicates a more complicated picture. The EU was estimated to have a strong positive effect on trade flows between member economies and the rest of the world—including trade to Asia. However, the specific effect of EU on Asian trade was found to be negative and statistically significant. Overall, the total trade effect dominates the Asia-specific effect, making the net effect of the EU on Asian trade positive. It is also worth noting that cross sectional estimation results suggest the net effect of the EU on Asian trade has grown more positive over the past two decades. Although not covered in our estimates, the new least developed countries initiative for EU member countries, which grants nonreciprocal trade preferences toward small and least developed countries, could carry negative consequences for the EU's level of trade with Asian countries excluded from the arrangement.

Trade between countries in the Asian and Pacific region and Mercosur member economies was estimated to have occurred at a rate higher than would be expected in the absence of the PTA. Lastly, estimates show the effect of ECO on Asian trade varied greatly across years of the cross sectional estimates, which likely reflects the widespread structural changes in the constituent economies during the 1980s and 1990s, but on average had a small positive effect on trade flows to and from the Asian region as a whole and Central Asia.

G. PTAs' Contribution to World Trade

In Table 8, the effects of PTAs on world trade in general are summarized. The indicator used for this purpose is the anti-logarithm of the sum of the estimated coefficients of the intrabloc, overall import, overall export, Asian import and Asian export variables less one. In general the indicators are positive. Only CER and NAFTA appear to have reduced trade. It was discussed earlier that the effect of NAFTA on its members' trade with the world was significantly negative and this effect dominated the bloc's positive effect on Asia's trade with its members. For CER, the negative effect of this PTA on its Asia's exports to its members explain why CER's effect on world trade is also to reduce its members' trade with the world. Both NAFTA and CER have

Table 8. **Summary of Effects of PTAs on Total World Trade**

	1980	1985	1990	1995	2000	Average
AFTA	1.38	1.72	1.20	0.76	0.75	1.16
Andean Pact	5.50	0.11	4.46	6.30	16.45	6.57
APEC	1.09	2.71	6.83	5.94	5.36	4.39
CER	0.00	-0.60	-0.61	-0.66	-0.64	-0.50
ECO	2.10	0.53	2.87	11.24	17.60	6.87
EFTA	-0.30	0.35	0.22	0.96	1.15	0.48
EU	-0.64	-0.49	-0.17	0.45	1.86	0.20
Mercosur	4.09	6.67	5.15	6.73	7.80	6.09
NAFTA	0.42	-0.54	-0.67	-0.56	0.09	-0.25
SAPTA	7.71	2.05	3.24	2.17	4.85	4.00
SPARTECA	18.60	57.56	41.01	68.47	63.51	49.83
Overall Average (weighted to trade shares)						2.42

Source: Authors' computation based on statistically significant coefficients on Tables 4 and 5.

insignificant effects on intrabloc trade. On average, world trade is increased because of PTAs by a factor of 2.4. This result of the gravity model analysis provides evidence that these PTAs create trade.

VI. CONCLUSIONS

In this study, we estimated a gravity model of bilateral trade involving 11 trading blocs most of which are from the Asian and Pacific region. The trade data used in estimating the gravity model is that of 83 countries from 1980 to 2000. The estimated coefficients of the basic determinants of the gravity model such as GDP, distance between capitals of trading partners, population, and physical area explain well cross-country trade flows.

Our estimates of the effect of different PTAs on the trade flows between members vary remarkably across PTAs. Preferential trading agreements are categorized into three groups based on whether they tend to foster intrabloc trade, foster greater trade with trading partners worldwide, or reduce trade in general without changing their respective intrabloc trade. Andean Pact, ECO, EFTA, Mercosur, SAPTA, and SPARTECA belong to the first group in varying intensity with respect to promoting intrabloc trade. These tend to expand their trade among their respective members at the expense of their members' imports from the world and exports as well, although in a few instances these PTAs have a positive effect on their exports to the world. Interestingly, these PTAs have the propensity to expand Asia's trade.

APEC, CER, and EU belong to the second group of PTAs that have expanded or have not changed at all their intrabloc trade, but this was not at the expense of their trade with the world. APEC and CER in particular illustrate the type of PTAs that adhere to open regionalism. EU, being in this list, is a surprise as other authors are of the view that EU is diverting trade toward its members.

AFTA and NAFTA are the PTAs that have not changed their intrabloc trade but reduced their overall trade with the world. While other authors have regarded AFTA as trade-creating, the result may be explained by the fact that in this analysis the bloc includes its new members. Earlier independent estimates had only included the original AFTA contracting parties. The new AFTA members are less integrated with the world economy as the founding members of this PTA.

In this study, we introduced two new dummy variables that allow the analyst to measure the impact of PTAs on the trades of countries in the Asian and Pacific region, while retaining the innovation made by Soloaga and Winters (2001) to the empirical gravity model analysis. One variable is designed to capture the effects of PTAs on Asia's imports from it. The other variable measures the impact of the PTA on Asia's exports to the trade bloc. The resulting added feature of the gravity model makes possible the impact of PTAs on Asia's overall trade.

In summary, the PTAs in this analysis have contributed significantly to trade expansion both at the global and regional (Asian and Pacific) levels. The results obtained in this study provide evidence that PTAs can create rather than divert trade.

These results suggest that PTAs offer a next-best path toward expanding world trade if negotiations for multilateral trade liberalization take a longer time to get completed. It will be important to follow macro-level cross-country research such as this paper with more focused studies on the dynamics of PTA members' policies toward trade with the rest of the world and participation in multilateral trading agreements such as the WTO. One claim that could be tested, for example, is whether negotiating PTAs help developing countries gain experience with trade liberalization on a limited scale that later smoothes the way toward more general trade opening (Michalopoulos 1999).

Having noted this potential, policymakers need to be aware that PTAs vary. There are PTAs that tend to divert trade toward its members, be unnecessarily costly to administer, or create opportunities for unproductive rent seeking activities. The challenge to policymakers is to continue to innovate on their respective regional trade arrangements. A few ideas include using the regional arrangement to solve for regional spillover problems or facilitate trade and capital movements among members, thereby reducing the cost of doing business and increasing investments and aggregate economic activity of its members.

REFERENCES

Aitken, N. D., 1973. "The Effect of the EEC and EFTA on European Trade: A Temporal cross-section Analysis." *American Economic Review* 63:881-92.

Bayoumi, T., and B. Eichengreen, 1995. Is Regionalism Simply a Diversion? Evidence from the Evolution of the EC and EFTA. IMF Working Paper 109, Washington D. C.

_____, 1997. "Is Regionalism Simply a Diversion: Evidence from the Evolution of the EC and EFTA." In T. Ito and A. Krueger, eds., *Regionalism versus Multilateral Trade Arrangements,*. NBER East Asia Seminar on Economics 6, Chicago: Chicago University Press.

Bhagwati, J. N., and A. Panagariya, 1996. *The Economics of Preferential Trade Agreements*. Washington, D. C.: AEI Press.

Bhagwati, J. N., A. Panagariya, et al., 1996. "Free Trade Target Date Essential to Remove 'Spaghetti Bowl' of Barriers." *Financial Times.* 25 June 1996. Page 1.

Boisso, D., and M. Ferrantino, 1997. "Economic Distance, Cultural Distance, and Openness in International Trade: Empirical Puzzles." *Journal of Economic Integration* 12(4):456-84.

Braga, P., R. Sadafi, and A. Yeats, 1994. Regional Integration in the Americas: Déjà Vu All Over Again?" *World Economy* 17:577-601.

CIA, (Central Intelligence Agency) 2001. *CIA World Factbook*. Available: http://www.cia.gov/cia/publications/factbook/default.htm.

de Melo, J., A Panagariya, and D. Rodrik, 1992. The New Regionalism: A Country Perspective. CEPR Discussion Paper 715. London. Center for Economic and Policy Research, Washington, D. C.

Deardorff, A., 1984. Testing Trade Theories and Predicting Trade Flows. In R. W. Jones and P. B. Kenen, *Handbook of International Economics 1*. Amsterdam: Elsevier Science Publishers.

Dollar, D., 1992. "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976-85." *Economic Development and Cultural Chang*e 40:523-544.

Drysdale, P., and R. Garnaut, 1982. "Trade Intensities and the Analysis of Bilateral Trade Flows in a Many-Country World." *Hitotsubashi Journal of Economics* 22:62-84.

Edwards, S., 1998. "Openness, Productivity and Growth: What Do We Really Know?" *Economic Journal* 20:383-98.

Frankel, J. A., and S-J. Wei, 1998. "Regionalization of World Trade and Currencies: Economics and Politics." In J. Frankel, ed., *The Regionalization in the World Economy*. Chicago: University of Chicago Press.

Frankel, J., 1997. *Regional Trading Blocs in the World Economic System*. Institute for International Economics, Washington D. C.

Garnaut, R., 1994. "Open Regionalism: Its Analytic Basis and Relevance to the International System." *Journal of Asian Economics* 5(2):273-90.

Havemann, J., 2002. "International Trade Data." Available: http://www.macalester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/TradeData.html.

Havrylyshyn, O., and L. Pritchett, 1991. European Trade Patterns after the Transition. Policy, Research, and External Affairs Working Paper Series No. 74, The World Bank, Washington, D. C.

Helpman, E., 1987. "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries." *Journal of the Japanese and International Economics* 1:62-81.

Helpman, E., and P. Krugman, 1985. *Market Structure and Foreign Trade*. Cambridge, Mass., London: MIT Press.

International Monetary Fund, 2001. *Direction of Trade Statistics*. Washington, D.C.: IMF Publications Services.

Krueger, A., 1997. "Free Trade Agreements versus Customs Unions." *Journal of Development Economics* 54:169-187.

Krugman, P., 1991. *Geography and Trade*. Cambridge, MA: MIT Press.

Linneman, H., 1966. *An Econometric Study of International Trade Flows*. Amsterdam: North Holland.

Michalopoulos, C., 1999. The Integration of Transition Economies into the World Trading System. World Bank Working Paper 2182, The World Bank, Washington, D. C.

Panagariya, A., 1994. "East Asia and the New Regionalism in World Trade." *World Economy* 17:817-39.

Petri, P. A., 1993. The East Asian Trading Bloc: An Analytical history. Iin J. Frankel and M. Kahler, eds.) *Regionalism and Rivalry: Japan and the U.S. in Pacific Asia*. Chicago: University of Chicago Press.

Polak, J. J., 1996. "Is APEC a Natural Regional Trading Bloc?" *The World Economy* September:533-43.

Pomfret, R., 2001. "National Borders and Disintegration of Market Area in Central Asia after 1991." Paper prepared for the pre-conference. Frankfurt, March 2001. Mimeo.

Preusse, H., 2001. "Mercosur—Another Failed Move Towards Regional Integration?" *World Economy* 24:911-31.

Sachs, J. D. and Warner, A., 1995. "Economic Reform and the Process of Global Integration." *Brookings Paper on Economic Activity* 0(1):1-95.

Schiff, M., 1997. "Small is Beautiful: Preferential Trade Agreements and the Impact of Country Size, Market Share, and Smuggling." *Journal of Economic Integration* 12(3):359-87.

Soloaga, I., and A. Winters, 2001. "Regionalism in the Nineties: What Effect on Trade?" *North American Journal of Economics and Finance* 12:1-29.

Venables, A., 2000. "Les Accords D'integration Regionale: Facteurs de Convergence ou de Divergence?" *Revue-d'Economie-du-Developpement* 0(1-2):227-46.

Wacziarg, R., 2001. "Measuring the Dynamic Gains from Trade." *World Bank Economic Review* 15(3):393-429.

World Bank,. 2001. *World Development Indicators*. The World Bank, Washington, D. C.

Wonnacott, P., 1997. "Beyond NAFTA¾The Design of a Free Trade Agreement of the Americas." In J. Bhagwati and A. Panagariya, eds., *The Economics of Preferential Trade Agreements*. Washington, D. C.: AEI Press.

World Trade Organization (WTO), 2001. *International Trade Statistics*. Geneva.

Yeats, A. J., 1998. "Does Mercosur's Trade Performance Raise Concerns about the Effects of Regional Trade Arrangements?" *World Bank Economic Review* 12(1):1-28.

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